in Massachusetts Bay, Mr. Rotch proposed an investigation by means of kites, flown from on board ship, of the meteorological conditions above the trades and the doldrums, a project which has received the approval of the International Aeronautical Congress, and of other scientific bodies.

The 'Effect of Meteorological Conditions upon Audibility' under various conditions at Blue Hill was observed during the year 1901, and the results are discussed by Mr. Rotch on pages 156–163. The source of sound was a steam whistle in the town of Hyde Park, the whistle being 4,400 meters northwest of and about 170 meters below the observatory. Investigations upon the electrification of, and upon the quantity of carbon dioxide contained in the air were conducted at the observatory by Mr. G. W. Pickard. Appendix D (pp. 215–239) is a discussion of 'Kites and Instruments Employed in the Exploration of the Air, at Blue Hill Observatory, 1897–1902,' by S. P. Fergusson, which will be found useful by any persons who are undertaking scientific kite construction. Of special interest are the sections which concern kite meteorographs, in devising and constructing which Mr. Fergusson has shown the greatest skill, ingenuity and patience.

Since Blue Hill Observatory first began its pioneer work in kite meteorology there has been a remarkably rapid development of similar work in Europe and elsewhere, but there is no reason to fear that the Blue Hill results will suffer in any way by comparison with those obtained abroad. R. DEC. W.

Vorlesungen ueber theoretische und physikalische Chemie, drittes Heft, Beziehungen zwischen Eigenschaften und Zusammensetzung. Second edition. By J. H. VAN'T HOFF. Braunschweig, Vieweg. 1903. 8vo. Pp. x + 155.

This is the third and concluding part of the second edition of Professor van't Hoff's 'Lectures.' Since the German, French and English versions of the first edition were noticed in SCIENCE, it is sufficient to say that in the present edition the subdivision and treatment of the subject are the same as in the first. There are a few verbal changes and some slight additions amounting to ten pages. The value of the book is immensely increased, however, by the fact that an index to the whole work has been furnished. The book is so familiar to chemists as a masterpiece of its kind that further commendation would be superfluous. ALEXANDER SMITH.

SCIENTIFIC JOURNALS AND ARTICLES.

The Journal of Comparative Neurology and Psychology for July contains in addition to editorial and review matter, a paper of 67 pages by Miss Jessie Allen, entitled, 'The Association Process of the Guinea Pig, A Study of the Psychical Development of an Animal with a Nervous System well Medullated at Birth.' This research forms an excellent control to the similar one recently published by Dr. J. B. Watson on the white rat, the nervous system of which is entirely non-medullated at birth. The rat comes to psychical maturity at about the twenty-third day; the guinea pig, on the other hand, reaches psychical maturity on the third day, but even in the adult lacks almost entirely that ingenuity which is so characteristic of the rat's method of overcoming obstacles in order to reach food. Histological examination of the developing guinea pig's brain reveals differences from the developing rat's brain which can be closely correlated with the differences in psychical development.

A QUARTERLY journal entitled 'Opthalmology' will begin publication on October 1, with Dr. H. D. Wurdeman as editor and publisher. The associate editors include Drs. Chas. H. May, New York City; Casey A. Wood, Chicago; Chas. A. Oliver, Philadelphia; Blencowe E. Fryer, Kansas City; Albert B. Hale, Chicago; Edmond E. Blaauw, Buffalo; Chas. Zimmermann, Milwaukee; Dr. Wm. Zentmayer, Philadelphia; J. Guttman, New York City; and Frank Allport, Chicago.

SOCIETIES AND ACADEMIES.

THE BIOLOGICAL SOCIETY OF ST. LOUIS.

IN an earlier number of this journal, August 14, 1903, there appeared a brief notice of the organization of the Biological Society of St. Louis. Since that time a more formal

organization has been effected, and since the society has constantly increased in strength and importance it seems desirable to give a brief account of the scientific programs of all the meetings which have been held up to the present time.

At the first meeting of the society, held at the rooms of Professor Greeley, March 3, 1903, Dr. A. W. Greeley reviewed and discussed the work of Calkins upon the life-cycle of *Paramœcium caudatum*. The program of the second meeting, March 24, at the home of Professor Coulter, consisted of a discussion by Dr. J. M. Prather, of Loeb's investigations on and theories concerning the prolongation of life in unfertilized eggs and a review by Mr. J. Arthur Harris of the essential features of the mutation theory as elaborated by Professor De Vries. At the third meeting, with the society as the guests of Dr. Budgett, April 28, Dr. Oscar Riddle discussed the papers of Dr. Eigenmann on the eyes of the blind vertebrates of North America. Dr. Riddle had assisted Dr. Eigenmann in much of this work and in more yet to be published, and consequently the general discussion of the broad outlines of the problems involved and their relation to the whole perplexing question of degeneration were of especial interest. At this meeting, Mr. W. L. Eikenberry discussed the literature of the synthesis of carbohydrates in chlorophyll-bearing plants in the light of recent work on 'extra-organic' photosynthesis —a paper calling forth considerable discussion, because of the fundamental importance of work on enzymes. On June 2, the society was the guest of Mr. Eikenberry. Mr. J. B. Lillard reviewed Dr. Lillie's work on the refusion of blastomeres and an electrical explanation of mitosis, and Professor S. M. Coulter reviewed the treatise of Livingston on the rôle of diffusion and osmotic pressure in plants. The society adjourned for the summer months.

On September 26, the society convened at the residence of Dr. Budgett. The host presented a review and discussion of the recent work of Hardy on the behavior of protoplasm and artificial colloidal solutions. October 28, the society was the guest of Drs. Eycleshymer, Potter, Wilson and Ransom. An extensive business session in which several important points in the policy of the society were discussed and fixed, was followed by the scientific papers of the evening. Mr. Perley Spaulding reviewed Ewart's work on protoplasmic streaming in plants, and Dr. Peter Potter discussed his own work toward the establishment of a norm-plate of the human body. By new methods of hardening, it is possible to retain the organs in the position occupied during life while serial sections are made, and from measurements and tracings made from these, norm-charts may be prepared which illustrate with a high degree of accuracy the relative positions of the various organs. Numerous charts to serve as data for the completed work were exhibited. December 2, the society held its session at the residence of Mr. Drayer. Among other business matters, the report of a committee on membership, recommending that election of new members, duly proposed and recommended by sponsors at a previous meeting, should be by unanimous ballot of members present, was accepted. The scientific program consisted of three original papers. Dr. E. C. Eycleshymer exhibited and discussed the more important features of the plates so far prepared toward the norm-plates of *Necturus* on which he is working for Kiefel's 'Normaltafeln zur Entwickelungsgeschichte der Wirbeltiere.' Dr. J. Arthur Harris presented preliminarily the results obtained from a study of apically dehiscent anthers. It seems that there is a relation not only between this mode of dehiscence and the form of the anther and other floral parts as well, but between these and the geographical distribution of the genera and species in which it occurs. Professor S. M. Coulter discussed the establishment of the new biological station in the Bermudas and gave the results of his ecological reconnoissance of the islands. All of these papers will appear later. January 6, 1904, the meeting was held at Hotel Granville. Dr. G. H. Holferty presented his paper on the development and phylogeny of the archegonium of *Mnium cuspidatum*, which has since been published in the *Botanical Gazette*. Dr. A. W. Greeley discussed his work on the structure of proto-

plasm, giving the results of a continuation of the experiments described in a preliminary contribution to an earlier number of SCIENCE. This paper and a biographical sketch of its author by Dr. Lyon has appeared in the *Biological Bulletin* since the death of Dr. Greeley. January 27 the society again met at Hotel Granville. Dr. R. J. Terry discussed the results of his researches on the skull of *Necturus*, soon to appear in one of the German anatomical journals. The officers for the year were elected as follows:

President.—Dr. B. M. Bolton.
Vice-President.—Mr. H. C. Drayer.
Secretary.—Dr. J. Arthur Harris.

On the evening of February 26, the society was the guest of Dr. Bolton. Dr. W J McGee, chief of the department of anthropology at the Louisiana Purchase Exposition, presented the scientific paper of the evening, having selected for his theme some phases of the adaptations of desert faunas and floras to their environment. He first compared certain old world deserts, with their very scant plant and animal life, with those of the new, where organisms show a high degree of systematic differentiation, and attributed this to the more rapid development of desert conditions in certain old world areas. There the changes were too rapid to permit the evolution of an adaptive habit and structure while in the American desert conditions have permitted the evolution of special forms well adapted to environment. He briefly described and traced the development of the clumps of vegetation so characteristic of the American deserts and discussed the interdependence, seeming almost a symbolic relationship, between the different plant and animal species of which they are composed. Some remarkable cases of symbiosis were described and special emphasis was laid upon the origin and development of symbiotic relationship under the excessively severe life conditions presented by a desert and some suggestions made upon the importance of these conditions in human civilization. March 30 the society was the guest of Dr. Terry. The report of a committee appointed to draw up resolutions concerning the death of Dr. Greeley was received. The scientific papers of the evening were three. Dr. C. Fish reported upon his investigations of the nature of an antitrypsin, produced by immunization with pancreatic extracts. He could demonstrate that this antiamboceptor is thermstabile (60° C.) and combines with the haplophorous group of the trypsin. As to the latter positive proof could be brought, that its active form is the combination of the pancreatic proenzym with enterokinase, thus confirming the views of Pawlow and others. The enterokinase forms the complement. Mr. G. E. McClure spoke on the symbiotic relation between ants and certain plants, giving a general view of the subject and exhibiting illustrative material. The significance of such data as that furnished in this field in the solution of the much-vexed question of the origin of adaptations was extensively discussed. Dr. B. M. Bolton spoke on his already published work on the effect of certain metals and metallic salts upon the growth of bacteria and exhibited a large series of very interesting preparations. At the meeting of the society, held in the Central High School, April 27, Mr. F. A. Lucas, of the United States National Museum, presented an illustrated paper on the whale, discussing morphological, biological and economic questions concerning the different species and whale fisheries. The final meeting of the spring was held at the Cherokee Garden, May 25. Mr. J. F. Abbott spoke of his work on the highly interesting *Cœloplana*. Extended collecting during the course of two summers at Misaki, Japan, resulted in the securing of some thirty or more of Kowalusky's *Cœloplana*. No embryological material was obtainable, but by good luck in fixing, the histological details have been worked out and the morphological position of the form pretty definitely established. *Cœloplana* is without doubt a ctenophor derived from the Cydippida, that has abandoned a pelagic life and taken up a littoral habit with a corresponding change in body form and consistency, loss of costæ, reduction of otolith and great extension of the gastric canal system. Most of the essential ctenophoral characters, such as the grasping

tentacles, the adhesive cells, epithelial gland cells, ciliated rosettes, etc., have been retained unchanged. The ciliated rosettes, for example, must be looked upon as vestigial structures, in a form with so little parenchyma and such an extensive gastric canal system as *Cœloplana* possesses. And all the details of structure indicate a highly specialized form rather than a primitive one. *Ctenoplana* would seem to represent a midway stage in which the costæ have been reduced, but not entirely lost. Such a loss of an organ through disuse indicates merely specialization and adaptation to littoral conditions rather than degeneration. Hence Willey's contention that *Ctenoplana* is not 'degenerate' is unnecessary, and his hypothesis that the form is a primitive one, untenable. Dr. J. Arthur Harris spoke of recent experimental work in floral ecology, discussing the relative importance of color and odor in the attraction of insects as shown in the work of Plateau, Andreae and others. Professor Abbott was elected to membership—the first person to be elected to membership in the society—after which the society adjourned until the September meeting.

J. Arthur Harris,
Secretary.

AMERICAN FISHERIES SOCIETY.

The thirty-third annual meeting of the American Fisheries Society was held at Atlantic City, New Jersey, July 26–28. Seventy members, representing 26 states, were in attendance. About 50 new active members were elected, and 6 foreigners were made honorary members. The officers for this meeting were:

President.—Frank N. Clark, Michigan.

Vice-President.—Tarleton H. Bean, New York.

Recording Secretary.—George F. Peabody, Wisconsin.

Corresponding Secretary.—W. de C. Ravenel, Washington, D. C.

Treasurer.—C. W. Willard, Rhode Island.

The sessions were devoted largely to the presentation and discussion of papers, which covered a wide range of subjects. Among the noteworthy papers were the following:

Dr. Tarleton H. Bean: 'The Fish and Game Department of the Universal Exposition at St. Louis.'

Mr. W. E. Meehan: 'A Year's Work of the Fisheries Interest in Pennsylvania.'

Dr. H. F. Moore: 'An Account of Progress in Sponge Culture.'

Mr. Charles G. Atkins: 'The Utilization of Neglected Fishes.'

Dr. F. M. Johnson: 'A Western Charr in an Eastern Home.'

Mr. S. G. Worth: 'The Cultivation of the Striped Bass.'

Mr. John W. Titcomb presented some 'Fishery Reminiscences of South America,' and Dr. H. M. Smith gave a lecture on 'Japan, the Paramount Fishery Nation,' illustrated with lantern slides.

One session was devoted to a very interesting symposium on the black basses and their cultivation; and the carp question incidentally came up on several occasions.

Mr. George F. Peabody paid a feeling tribute to the late Hon. E. E. Bryant, president of the Wisconsin Fish Commission, who died while on his way home from the last meeting of the society at Woods Hole.

Near the close of the session, U. S. Fish Commissioner Bowers was called for and made some felicitous remarks.

Mr. Henry T. Root, president of the Rhode Island Commission of Inland Fisheries, was elected president of the society for the next term, and White Sulphur Springs, West Virginia, was selected as the place of meeting in 1905.

The society has about 450 active members, most of whom are engaged in practical or administrative work in fish culture or fishery protection, but some are biologists whose work brings them into touch with the fishery interests, others are commercial fishermen, and a few are simply anglers.

DISCUSSION AND CORRESPONDENCE.

AREAS IN THE UNITED STATES SUITABLE FOR BEET CULTURE.

To the Editor of Science: In the second part of Professor Armstrong's article, which appeared in Science, August 5, 1904, I note the statement made by him in regard to the preparation of a map showing the probable areas in the United States suitable for beet culture. In this connection it is only just